



## Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact [support@jstor.org](mailto:support@jstor.org).

haphazard, in character. The phenomena are thus similar to those shown in the "learning" of higher organisms, save that the modifications depend upon less complex relations and last a shorter time.

Each organism is found to exhibit a set of actions made up, in the case of the lower organisms, of a few factors combined in various ways in a coördinated system which Professor Jennings designates as "the action system." For the term "motor reaction" employed in his earlier papers the phrase "avoiding reaction" is now used to designate the stereotyped method of reaction of Infusoria to most stimuli. The author rejects the local action theory of tropisms as a "more or less artificial construction, made by combining certain elements of behavior and omitting others that are of most essential significance." In its place he proposes the method of "trial and error" as an explanation of behavior. The stimulus interferes with definite internal processes occurring in the organism and this interference causes a change in behavior and varied movements which subject the organism indiscriminately to many different conditions. It merely acts in all sorts of ways possible to it. When one of these new conditions thus met relieves the organism from the existing interference with its life processes, the trials cease.

As a second cornerstone in the formulation of behavior we find the law of "resolution of physiological states" thus stated: "The resolution of one physiological state into another becomes easier and more rapid after it has taken place a number of times." It appears that even in *Stentor* and *Vorticella* repetition of an action brings the second step in a sequence in behavior more quickly upon the first. Here lie the foundations of the phenomena which are usually designated as habit formations, memory and learning, and the question may well be asked whether they are not coëxtensive with life and based fundamentally on the physical and chemical structure of colloids.

C. A. K.

**Modernized Darwinism.**<sup>1</sup> — Professor Guenther has written a very readable book on Darwinism and allied biological problems which the tyro will find quite intelligible. The translation seems good and the publishers have done their part well. The treatment of the subject is rather novel, most of the chapters being divided tax-

<sup>1</sup> C. Guenther. *Darwinism and the Problems of Life*. Translated from the third edition by Joseph McCabe. London: A. Brown & Co., 1906, Dutton & Co., New York, American agents. 8vo, 439 pp.

inomically under the headings mammals, birds, reptiles, and amphibians, etc. The group names, however, merely serve as hooks on which to hang certain biological discussions. Thus, under mammals are considered: protective coloration of hairy coats, hibernation, play of animals; under birds, sexual selection and migration; under reptiles and amphibians, the death of species and the origin of aërial life; under fishes, the origin of terrestrial vertebrates, rudimentary organs, and the biogenetic law; under insects, mimicry, instincts, inheritance of acquired characters; under crustaceans and molluscs biochemistry, parthenogenesis, and the meaning of sexual reproduction; under worms and coelenterates, the descent of animals, parasitic life and symbiosis; under Protozoa, the principle of division of labor, the origin of the germ cells, and outlines of a theory of heredity. This arrangement does not lend itself to a systematic and logical development of the subject but the result is easy and delightful reading.

Not only is the book interestingly written but it is also a perfectly safe one. No evolutionary heresies tarnish its pages; nothing but simon-pure, orthodox natural selection is permitted here. Of course, as befits a scientific book, reference is made to de Vries's mutation theory and that of orthogenesis. The former is quickly disposed of in a couple of pages by stating first, that it cannot account for adaptations because with each mutation many or all parts change and all the changes cannot be adaptive. Secondly, an arising mutation will be swamped by intercrossing with the original stock. "Hence the multiplicity of our actual species cannot be due to mutations." Now that we know that species *cannot* be due to mutations it is to be hoped that people will please stop speaking about them. Similarly in regard to orthogenesis the theory is stated in one paragraph and then — "we need not delay long with this theory, because we know that the foundation of it is unsound." Thus authority speaks and an obedient scientific world will quickly forget that the theory was ever held by anyone. The folly of any other theory of evolution than Darwinism of the Weismannian brand is overwhelmingly demonstrated in every chapter by persuasive arguments and appealing examples. The necessary limitations of natural processes are so clearly set forth that the investigator has only himself to blame if he wastes time investigating any other theories of evolution; for, has not the author shown that they are all impossible?

C. B. D.